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## Adverse childhood events: incarceration of household members and health-related quality of life in adulthood

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### Abstract

**Background**—Incarceration of a household member has been associated with adverse outcomes for child well-being.

**Methods**—We assessed the association between childhood exposure to the incarceration of a household member and adult health-related quality of life (HRQOL) in the 2009/2010 Behavioral Risk Factor Surveillance System controlling for age, race/ethnicity, education, and additional adverse childhood experiences.

**Results**—Adults who lived in childhood with an incarcerated household member had higher risk of poor HRQOL compared with adults who had not (adjusted relative risk [ARR] 1.18; 95% CI 1.07, 1.31). Among Black adults the association was strongest with the physical health component of HRQOL (ARR 1.58 [95% CI 1.18, 2.12]); among White adults, the association was strongest with the mental health component of HRQOL (ARR 1.29, [95% CI 1.07–1.54]).

**Conclusions**—Living with an incarcerated household member during childhood is associated with higher risk of poor HRQOL during adulthood, suggesting that the collateral damages of incarceration for children are long-term.

### Keywords

Adverse childhood experiences; incarceration; health-related quality of life; racial/ethnic disparities

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The U.S. leads the world in incarceration, with nearly one of every 100 adults behind bars.<sup>1,2</sup> There is growing attention to associations between incarceration and health disparities. Research on incarceration's collateral damage to children has also increased.<sup>3–9</sup> To date,

though, there is little evidence of incarceration's long-term consequences for health, either for the individual or for his/her family.

Incarceration expanded rapidly starting in the 1970s, and racial and ethnic disparities in incarceration widened at the same time. This was largely due to the war on drugs, which disproportionately targeted Blacks and Hispanics.<sup>10</sup> Although the Substance Abuse and Mental Health Services Administration (SAMHSA) has shown consistently that Black and Hispanic adults do not use drugs more than White adults, between 1980 and 2007 Black adults were arrested on drug charges at rates that were 2.8 to 5.5 times higher than White adults.<sup>11,12</sup> By 2009, the Black male incarceration rate was 3,119 per 100,000 and the Hispanic male incarceration rate was 1,193 per 100,000, compared with a White male rate of 487 per 100,000.<sup>13</sup> Legal scholars have illustrated how these racial differences in arrest and incarceration can occur despite a purportedly race-neutral law enforcement and criminal justice system.<sup>10</sup>

These racial/ethnic differences in incarceration rates mean that Hispanic and especially Black children are at much higher risk of experiencing the incarceration of a parent or other household member, compared with Whites. An analysis of a 1990 birth cohort found that while White children had a 3.6–4.4% cumulative risk of experiencing parental incarceration by age 14, Black children in the same age cohort had a 25–28% cumulative risk.<sup>9</sup> Moreover, the precipitous rise in incarceration rates since the 1980s means that the number of children with an incarcerated family member has also increased dramatically over the past 30-plus years.

Concern is mounting regarding the public health consequences of incarceration. Population health datasets rarely include incarceration history, making it difficult to measure the association between incarceration and health outcomes, behaviors, and disparities.<sup>14,15</sup> However, there is strong evidence of incarceration's adverse effects on the primary social determinants of health such as employment, homelessness, and marriage.<sup>16–19</sup> As a disruptive life event experienced disproportionately by young Black and Hispanic men, incarceration may also be contributing to health disparities in the U.S.

The incarceration of a household member affects children's welfare in many ways. In cases of domestic violence, the removal of the perpetrator may have a positive effect on the child's well-being. However, there is strong evidence that the net effect of incarceration on children is harmful.<sup>8</sup> This is especially evident in light of the extensive incarceration of people for nonviolent offenses or technical violations such as missing a parole meeting.<sup>20</sup> In such cases, parental incarceration has been linked to increased aggression, depression, and anxiety in their children.<sup>4,8,21</sup> Children's well-being can be affected through multiple pathways, including reduced economic resources, traumatic removal of the family member, and stigmatization.<sup>22,23</sup>

Longitudinal studies are tracking the children of incarcerated parents,<sup>21</sup> but these are in the early years and we still have limited means of quantifying the long-term health effects of incarceration on both the prisoner and his/her family. Recently, investigators added an Adverse Childhood Experiences (ACE) module to the Behavioral Risk Factor Surveillance

Survey (BRFSS). This module allows us to assess the later-life effects of having a household member incarcerated during childhood. Elsewhere, these data have revealed that this childhood experience is associated with specific health behaviors such as substance use, smoking, and heavy drinking in adulthood.<sup>24,25</sup> We examined whether childhood exposure to the incarceration of a household member is also associated with overall health-related quality of life (HRQOL) in adulthood. Health-related quality of life, which includes both physical and mental health components, has been identified as a key health measure and has been used for over a decade to track the nation's health and health disparities.<sup>26</sup> It has been validated as predictive of mortality, hospitalization, and use of health care.<sup>27</sup> We analyzed 2009–2010 BRFSS data to examine associations between childhood exposure to incarceration of a household member and adult HRQOL (and its components of physical health and mental health), first for the entire sample and then stratified by race/ethnicity. We hypothesized that experiencing incarceration of a household member in childhood would be associated with decreased HRQOL in adulthood.

## Methods

The BRFSS is a yearly cross-sectional telephone-administered survey, administered by all 50 states and the District of Columbia, Puerto Rico, the U.S. Virgin Islands, and Guam. The design and methodology of this survey are described in detail elsewhere.<sup>28</sup> An optional ACE module was administered in Arkansas, Louisiana, New Mexico, Tennessee, and Washington in 2009 and in the District of Columbia, Hawaii, Maine, Nevada, Ohio, Pennsylvania, Vermont, Washington, and Wisconsin in 2010. The response rates for these states in these years ranged from 47.0% (Pennsylvania) to 60.5% (Vermont).<sup>29</sup>

The ACE module was based on similar questions from the Kaiser Family Foundation—Centers for Disease Control and Prevention (CDC) ACE Study and adapted for a telephone survey.<sup>30</sup> Participants were asked of their first 18 years of life, “Did you live with anyone who served time or was sentenced to serve time in a prison, jail, or other correctional facility?”<sup>31</sup> with possible responses of “yes,” “no,” and “don't know/not sure.” Using the same method as previous ACE studies<sup>30,32</sup> we categorized the responses into yes and no, with “don't know or not sure” (<1% of sample) considered a negative response. Using the United States Census definition of a household as including “all the persons who occupy a housing unit,”<sup>33</sup> we refer to those with affirmative responses as having been “exposed to household incarceration during childhood.” After removing those with missing information and those who refused to answer the question (6.1% of participants in states that administered the ACE module), the initial analytic sample consisted of 81,910 adults.

We examined HRQOL as the primary outcome, measured by the number of days out of the past 30 that participants reported poor physical or poor mental health. Two questions were used for this measure: “Now thinking about your physical health, which includes physical illness and injury, for how many days during the past 30 days was your physical health not good?” and “Now thinking about your mental health, which includes stress, depression, and problems with emotions, for how many days during the past 30 days was your mental health not good?” We summed the number of poor mental or physical health days to obtain the overall number of poor health days (weighted mean 6.7; standard error (SE) 0.08; median 1;

range 0–30). Overall poor HRQOL was defined as 14 or greater of the summed number of poor mental or physical health days.<sup>26</sup> In addition, we analyzed poor physical (weighted mean 3.7; SE 0.06; median 0; range 0–30) and poor mental health (weighted mean 3.4; SE 0.6; median 0; range 0–30) independently. We dichotomized both poor physical and mental health as 0–13 days or 14–30 days. Fourteen or more days of poor mental health or poor physical health was considered frequent mental distress<sup>34</sup> or physical distress, respectively.

Among the study population, we examined the distributions of five socio-demographic variables: sex (male/female), age (18–30/31–44/45–64/65–99), and race/ethnicity (non-Hispanic White/non-Hispanic Black/Hispanic/non-Hispanic other/non-Hispanic multiracial), education (less than high school education, high school graduation or GED, and at least some college) and income (<\$20,000/\$20,000–\$49,999)/ \$50,000/don't know/refused/missing).

Since ACEs are highly correlated,<sup>35,36</sup> it is likely that a child who lived with an incarcerated household member also experienced other ACEs. We therefore created an ACE score following the method described in detail elsewhere where 11 questions were used to develop a score (range 0–8) of number of ACEs experienced.<sup>30,32</sup> Here, however, we excluded exposure to household incarceration during childhood (range 0–7) before categorizing the score and entering it into the model as dummy variables. The other seven ACEs were childhood sexual abuse, physical abuse, emotional abuse, witnessing domestic violence, exposure to drug or alcohol abuse, living with a mentally ill household member, and parental separation or divorce

We first compared the distribution of socio-demographic variables and the number and type of additional adverse childhood experiences in those who had lived with an incarcerated household member *vs.* those who had not, using chi-square tests. Next we examined differences in the distribution of HRQOL, including its physical and mental health components, across the main exposure variable. We ran separate regression models using the binomial distribution with a log link to obtain risk ratios. Each covariate was put in the model separately and those that changed the risk ratio by 10% were included in the final model. Race/ethnicity was retained in the model even though it did not change the risk ratio by 10% to facilitate interaction analyses. Results from models that controlled for income and models that controlled for education were substantially the same. We therefore present results from models that control for education since more than 12% of respondents refused to provide or did not know their current annual income. We also tested for change in the results when dummy variables for either year of interview or resident state were included. Since these variables did not change the association between exposure to household incarceration during childhood and any of the outcomes we present models without these terms. Similarly, interaction terms between race/ethnicity and exposure to household incarceration during childhood were tested but proved not significant and were not included in the final model. Finally, because of the large differences in incarceration rates by race and ethnicity, we re-ran the final model stratified by race and ethnicity for White, Black, and Hispanic adults. We used STATA SE v 12.1<sup>37</sup> with survey commands to account for the complex survey design and to weight the data to account for non-coverage and non-response.<sup>28</sup>

## Results

Among adults in the states included in this study, 6.5% were exposed to household incarceration during childhood. Those exposed were younger at the time of the survey (37% vs. 14% age 18–30), less educated (17% vs. 6% with less than a high school education), and less likely to be White (24% Black or Hispanic, vs. 11% Black or Hispanic) compared with those without the exposure. Those with exposure to household incarceration during childhood were also much more likely to have experienced other adverse experiences of childhood (36% had experienced 5–7 other ACEs, compared with 6% of those without the exposure; Table 1).

In unadjusted analysis (Table 2), exposure to household incarceration during childhood was associated with overall poor HRQOL in adulthood (RR 1.70 [95% CI 1.54, 1.88]) as well as both poor physical health (RR 1.42 [95% CI 1.23, 1.64]) and poor mental health (RR 2.38 [95% CI 2.08, 2.72]). When adjusted for age, race/ethnicity, education and number of other adverse childhood experiences, the associations between exposure to household incarceration during childhood and both poor overall adult HRQOL and poor mental HRQOL were attenuated but remained significant (ARR 1.18 [95% CI 1.07, 1.31] and ARR 1.22 [95% CI 1.06, 1.41] respectively). However, based on the adjusted model, the association between exposure to household incarceration during childhood and poor physical HRQOL was no longer statistically significant (ARR 1.15 [95% CI 0.99, 1.33]).

When stratified by race/ethnicity, the association between the childhood exposure and overall adult HRQOL was similar for White (ARR 1.18 (95% CI 1.04, 1.34)), Black (ARR 1.20 (95% CI 1.01, 1.43)), and Hispanic (ARR 1.15 (95% CI 0.80, 1.64)) adults, but the ARR for Hispanic adults did not reach statistical significance (Table 3). Among Whites, the association between the exposure to household incarceration during childhood and overall HRQOL was driven primarily by the higher odds of poor mental health days (ARR 1.29, 95% CI 1.07–1.54) rather than physical health days. Among Blacks, conversely, the childhood experience of living with an incarcerated household member was associated with poorer physical health in adulthood (ARR 1.58 (95% CI 1.18, 2.12)) but not poor mental health. Among Hispanics, the association between the exposure and overall HRQOL and its physical and mental health components was not significantly different for those who had exposure to household incarceration during childhood vs. those who had not (Results not shown).

## Discussion

Living with an incarcerated household member during childhood is associated with higher risk of poor HRQOL. Only part of this relationship is accounted for by coexisting adverse childhood events.

Other studies have also found that childhood exposure to household incarceration is associated with an increase in adverse health outcomes among adults such as ischemic heart disease<sup>38</sup> and depressive disorders.<sup>39</sup> And among young adults, childhood exposure to incarceration has been associated with more marijuana and other illegal drug use compared

with youth without this exposure.<sup>24</sup> But to our knowledge, this is the first study using a population-based sample to provide an analysis of childhood exposure to household incarceration in relation to overall adult health.

Our study provides additional evidence that the epidemic of incarceration in the U.S.<sup>1,40</sup> is one mechanism by which health disparities are perpetuated. As in previous research,<sup>32</sup> exposure to household incarceration during childhood was much more prevalent among Black (15%) and Hispanic (11%) adults than among White adults (5%). While the relationship between living with an incarcerated household member during childhood and poor overall adult HRQOL is similar for both Black and White adults, the prevalence is much higher for Black adults than for White adults.

We also found racial/ethnic differences when looking at the component physical and mental health parts of HRQOL in relation to exposure to household incarceration during childhood. Among Black adults poor physical health was associated with exposure to household incarceration during childhood, but this association was not significant for White adults. Conversely, among Whites poor mental health was associated with childhood exposure to household incarceration; this association was not significant among Blacks or Hispanics. We caution that similar analyses should be conducted with other datasets before concluding that exposure to household incarceration during childhood is not associated with Hispanic adult HRQOL. Given the dramatic increase in racial incarceration disparities in the past decades and the impact of living with an incarcerated household member during childhood, racial disparities in poor adult health will also continue to grow as the children who had household members incarcerated in the 1990s continue to reach adulthood.

Black adults have consistently reported higher rates of both poor physical and mental health than White adults have reported.<sup>41,42</sup> This was true in the present study population, although differences were modest. It is unclear why childhood exposure to incarceration would have stronger associations with adult physical health for Black adults, but with adult mental health for White adults. A possible explanation is that the effects are not different but that the manifestations of mental health issues differ by race. For instance, somatization, or the physical manifestation of mental illness or distress, is estimated to occur at a rate of 15% among Black adults and 9% among White adults,<sup>43</sup> which might provide a partial explanation for the race-specific patterns for physical and mental health that we found.

Incarceration's strains on households appear to have enduring associations with health into adulthood. Although incarceration appears to have crested in the U.S.,<sup>2</sup> we caution that children exposed to incarceration during its peak will continue to reach adulthood with the accompanying health consequences for many years to come. We see at least three ways that health providers can act to address the needs of this high-risk but hard-to-identify population.

First, it is crucial that health providers and public health practitioners use their professional authority to support policies aimed at reducing the epidemic of incarceration. Without question, some people must be incarcerated for the protection of society. However, many people convicted of minor and nonviolent offenses could be more effectively handled by

alternatives to incarceration such as community justice programs, drug courts, and mental health courts.<sup>44,46</sup>

Second, the effects of familial incarceration may be mitigated by improving coordination and active partnerships among state agencies, especially Departments of Correction, health departments, and Departments of Children, Youth and Families. It is important to note that there are household stressors pertaining to not only incarceration but reentry, which is also often a period of stress and anxiety. Most prisons offer some discharge planning, but a 2007 study found that only 10% of state prison releasees received it as needed.<sup>47</sup> Interagency cooperation in expanding either parenting programming during incarceration or discharge planning that addresses family health may interrupt some of the pathways between childhood exposure and adult health. Existing programs and services should also be systematically evaluated and reviewed, as there is minimal information available regarding their effectiveness.

Third, while clinical recommendations are beyond the scope of this research, health providers and public health practitioners may better target patient needs by remaining alert to the role that childhood exposure to household incarceration may play in their patients' overall health or chronic disease risk behaviors such as smoking.<sup>25</sup> There is the possibility that patient-provider discussions may help identify and address the specific pathways of that association (e.g., stress, trauma, or economic strain). Given the high rates of co-occurrence between exposure to household incarceration and other adverse childhood experiences, providers (especially mental or behavioral health providers) who are regularly trained to look for other ACEs could add incarceration to the conditions they ask about in their patients' lives.

There are several limitations to this study. While there is evidence suggesting that a single question about household incarceration is valid and reliable,<sup>48,49</sup> we were unable to evaluate the effects of which household member was incarcerated, for how long, for what type of offense (including violent *versus* other offenses), and at what time point in the participant's childhood. We assumed that in most cases the incarcerated household member was a parent but are unable to verify that assumption. Evidence to date is mixed on whether which parent is incarcerated modifies the effect of parental incarceration among children manifesting antisocial behavior.<sup>5,6,50</sup> There are critical differences between the household and caretaking experiences of children with incarcerated mothers and those of children with incarcerated fathers<sup>51</sup> that may be contributing to the racial differences observed here. While we controlled for the number of additional ACEs experienced we did not control for each individual ACE and the association observed here may be due to these other factors.

We were also unable to account for the adult participants' own incarceration histories in our analyses since the BRFSS, like many other nationally representative health data sets,<sup>14</sup> does not collect this information. Since the BRFSS is a telephone survey with a target population of the non-institutionalized adult population,<sup>28</sup> adults who are currently incarcerated were not a part of the study. People who have family members—especially parents—who were incarcerated may themselves be at greater risk of incarceration;<sup>52</sup> therefore, incarcerated people excluded from the sample are also more likely to have had household members

incarcerated during their childhood, which may have biased our results. Six percent of participants in the states that administered the ACE module were excluded due to invalid or missing information on the exposure to household incarceration during childhood question. Participants who were excluded were younger, poorer and more likely to refuse to give income information, less educated, more likely to be Black or Hispanic, and more likely to have poor health outcomes. As a consequence, we speculate that our estimated associations among Blacks and Hispanics were modestly attenuated towards the null.

People who were exposed to the incarceration of a household member during childhood are at heightened risk for poor health-related quality of life into adulthood. Continued epidemiological studies of the children of people redirected to such alternatives may provide a valuable basis for measuring the impact of reduced incarceration on health disparities.<sup>53</sup>

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## Notes

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**Table 1**

## CHARACTERISTICS OF 2009–2010 BRFSS RESPONDENTS IN 12 STATES AND THE DISTRICT OF COLUMBIA

	No exposure to household incarceration during childhood 93.5% (n=78,193)	Exposure to household incarceration during childhood 6.5% (n=3,717)	p-value
Age (years)			p<.001
18–30	14% (4,654)	37% (763)	
31–44	31% (12,439)	35% (960)	
45–64	36% (34,104)	23% (1,475)	
65+	19% (26,455)	6% (508)	
Gender			p<.014
Male	48% (29,800)	52% (1,499)	
Female	52% (48,393)	48% (2,218)	
Income (\$)			p<.001
<20,000	20% (18,525)	35% (1,432)	
20,000–49,999	23% (19,460)	23% (891)	
50,000	45% (30,711)	28% (1,010)	
Don't know/refused/missing	12% (9,497)	13% (384)	
Education			p<.001
No high school degree	6% (5,598)	17% (590)	
High school or GED	30% (22,290)	37% (1,282)	
Some college/college degree	64% (50,181)	46% (1,841)	
Race/ethnicity			p<.001
White, non-Hispanic	83% (61,725)	69% (2,288)	
Black, non-Hispanic	6% (5,001)	16% (602)	
Hispanic	5% (3,807)	8% (356)	
Other, non-Hispanic	4% (4,420)	4% (216)	
Multi, non-Hispanic	2% (2,297)	4% (218)	
ACE Score <sup>a</sup>			p<.001
0	45% (35,153)	5% (249)	
1	23% (17,614)	12% (475)	
2	13% (9,584)	14% (579)	
3	8% (5,949)	18% (568)	
4	5% (3,984)	15% (499)	
5–7	6% (4,235)	36% (1,225)	
Other ACE experience:			
Emotional abuse	25% (19,259)	58% (2,054)	p<.001
Physical abuse	14% (11,059)	40% (1,443)	p<.001
Sexual abuse	10% (9,194)	30% (1,174)	p<.001
Exposure to domestic violence	13% (10,631)	47% (1,688)	p<.001
Exposure to substance abuse	23% (18,879)	81% (2,856)	p<.001
Mentally ill household member	16% (11,647)	45% (1,578)	p<.001

	No exposure to household incarceration during childhood 93.5% (n=78,193)	Exposure to household incarceration during childhood 6.5% (n=3,717)	p-value
Parental separation or divorce	22% (15,332)	59% (1,977)	p<.001
<i>Health-Related Quality of Life</i>			
Overall HRQOL (number of days in past 30 days)			p<.001
<14	80% (61,393)	67% (2,440)	
14–30	20% (16,800)	33% (1,277)	
Unhealthy mental days (of past 30)			p<.001
<14	90% (69,929)	77% (2,908)	
14–30	10% (7,202)	23% (762)	
Unhealthy physical days (of past 30)			p<.001
<14	89% (66,723)	85% (2,945)	
14–30	11% (9,961)	15% (699)	

ACE=Adverse Childhood Experiences

HRQOL=Health-Related Quality Of Life

<sup>a</sup> Adverse Childhood Experience score: count of all ACEs excluding exposure to household incarceration.

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UNADJUSTED AND ADJUSTED RISK OF HEALTH OUTCOMES FOR ADULTS WHO, AS A CHILD, LIVED WITH SOMEONE WHO WAS INCARCERATED COMPARED TO ADULTS WHO DID NOT, 2009–2010 BEHAVIORAL RISK FACTOR SURVEILLANCE SURVEY (BRFSS)

Table 2

	Poor overall HRQOL <sup>a</sup>		Poor physical health		Poor mental health	
	RR	ARR (95% CI) <sup>b</sup>	RR	ARR (95% CI) <sup>b</sup>	RR	ARR (95% CI) <sup>b</sup>
No exposure to household incarceration during childhood	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
Exposure to household incarceration during childhood	1.70 (1.54, 1.88)	1.18 (1.07, 1.31)	1.42 (1.23, 1.64)	1.15 (0.99, 1.33)	2.38 (2.08, 2.72)	1.22 (1.06, 1.41)
No high school degree		1.00 (reference)		1.00 (reference)		1.00 (reference)
High school or GED		0.71 (0.66, 0.77)		0.63 (0.57, 0.70)		0.66 (0.57, 0.77)
Some college/college degree		0.50 (0.46, 0.54)		0.42 (0.38, 0.46)		0.46 (0.40, 0.53)
Age 18–30 years		1.00 (reference)		1.00 (reference)		1.00 (reference)
Age 31–44 years		1.05 (0.93, 1.19)		1.57 (1.26, 1.96)		1.03 (0.88, 1.21)
Age 45–64 years		1.39 (1.25, 1.55)		2.96 (2.43, 3.61)		1.16 (1.02, 1.34)
Age 65+ years		1.57 (1.41, 1.75)		3.65 (3.00, 4.44)		0.73 (0.63, 0.85)
0 other ACEs		1.00 (reference)		1.00 (reference)		1.00 (reference)
1 other ACE		1.22 (1.12, 1.32)		1.14 (1.03, 1.26)		1.53 (1.33, 1.76)
2 other ACEs		1.56 (1.43, 1.70)		1.52 (1.37, 1.70)		2.29 (1.99, 2.64)
3–7 other ACEs		2.18 (2.04, 2.34)		2.09 (1.90, 2.29)		3.46 (3.08, 3.90)

RR=Risk Ratio

ARR=Adjusted Risk Ratio

CI=Confidence Interval

ACE=Adverse Childhood Experiences

<sup>a</sup>Defined as 14 poor physical or mental health days of the past 30 days.<sup>b</sup>Adjusted for age, education, and number of additional adverse childhood experiences.

**Table 3**

UNADJUSTED AND ADJUSTED RISK OF POOR OVERALL HEALTH-RELATED QUALITY OF LIFE FOR ADULTS WHO, AS A CHILD, LIVED WITH SOMEONE WHO WAS INCARCERATED COMPARED TO ADULTS WHO DID NOT, STRATIFIED BY RACE/ETHNICITY, 2009–2010 BEHAVIORAL RISK FACTOR SURVEILLANCE SURVEY (BRFSS)

	White, Non-Hispanic		Black, Non-Hispanic		Hispanic	
	Risk Ratio	Adjusted Risk Ratio <sup>a</sup>	Risk Ratio	Adjusted Risk Ratio <sup>a</sup>	Risk Ratio	Adjusted Risk Ratio <sup>a</sup>
No exposure to household incarceration during childhood	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)	1.00 (reference)
Exposure to household incarceration during childhood	1.74 (1.54, 1.97)	1.18 (1.04, 1.34)	1.59 (1.25, 2.01)	1.20 (1.01, 1.43)	1.38 (0.99, 1.91)	1.15 (0.80, 1.64)
No high school degree		1.00 (reference)		1.00 (reference)		1.00 (reference)
High school or GED		0.70 (0.63, 0.78)		0.78 (0.64, 0.94)		0.72 (0.55, 0.93)
Some college/college degree		0.48 (0.44, 0.53)		0.52 (0.42, 0.64)		0.70 (0.54, 0.90)
Age 18–30 years		1.00 (reference)		1.00 (reference)		1.00 (reference)
Age 31–44 years		0.99 (0.86, 1.15)		1.44 (1.02, 2.03)		0.97 (0.69, 1.35)
Age 45–64 years		1.28 (1.12, 1.46)		2.05 (1.51, 2.79)		1.63 (1.18, 2.25)
Age 65+ years		1.44 (1.26, 1.65)		2.38 (1.73, 3.27)		1.67 (1.18, 2.36)
0 other ACEs		1.00 (reference)		1.00 (reference)		1.00 (reference)
1 other ACE		1.21 (1.10, 1.32)		1.05 (0.84, 1.33)		1.33 (0.97, 1.83)
2 other ACEs		1.54 (1.40, 1.69)		1.49 (1.15, 1.95)		1.65 (1.21, 2.27)
3–7 other ACEs		2.12 (1.96, 2.30)		2.25 (1.83, 2.75)		2.14 (1.66, 2.74)

ACE=Adverse Childhood Experiences

<sup>a</sup>Adjusted for age, education, and number of additional adverse childhood experiences.